a computer-controlled logic system operatively connected to the particle source for selectively propelling the particles toward the target nuclei to produce a nuclear reaction, and

a containment system for aligning the products of the nuclear reaction such that the particles move in approximately the same direction, produce a jerk or oscillation in the motion of the target nuclei and thereby generate gravitational waves,

2. A device according to claim 1 in which the plurality of target nuclei are contained in a superconducting medium.

3. A device according to claim 1 in which the plurality of target nuclei comprises a gas.

4. A device according to claim 3 wherein the gas includes electron gas.

5. A device according to claim 1 in which the plurality of target nuclei comprises a fluid.

6. A device according to claim 5 in which the fluid is a superconducting fluid.

7. A device according to claim 1 in which the plurality of target nuclei are contained in an electromagnetic field.

8. A device according to claim 7 in which the electromagnetic field is external to the plurality of target nuclei.

9. A device according to claim 7 in which the electromagnetic field is ferromagnetic.

B' cont.

10. A device according to claim 7 in which the electromagnetic field is internal to the plurality of target nuclei.

11. A device according to claim 10 in which the electromagnetic field comprises intermolecular forces.

12. A device according to claim 1 in which the plurality of target nuclei are aligned in a spin-polarized state.

13. A device according to claim 1 in which the source of particles for producing nuclear-reaction products is a pulsed particle beam.

14. A device according to claim 13 in which the particles comprising the particle beam are photons.

15. A device for generating gravitational waves utilizing nuclear reactions to produce physical motion of submicroscopic particles.

16. A gravitational wave generating device comprising:

a plurality of target energizable elements,

a plurality of energizing elements that act on the energizable elements and generate gravitational waves, and

a computer controlled logic system operatively connected to the energizing elements to control the action of the energizing elements.

17. A device according to claim 16 in which the energizable elements are energized to produce a third time derivative of the motion of the energizable elements or a jerk.

B1 cont.

18. A device according to claim 16 in which the energizable elements are energized to produce a harmonic oscillation.

19. A device according to claim 16 in which the energizable elements are molecules.

20. A device according to claim 16 in which the energizable elements are atoms.

21. A device according to claim 16 in which the energizable elements are atomic nuclei.

22. A device according to claim 16 in which the energizable elements are nuclear particles.

23. A device according to claim 16 in which the energizing elements are an anisotropic particle beam.

24. A device according to claim 16 in which the energizing elements are an isotropic particle beam.

25. A device according to claim 16 in which the energizing elements create a multiquantum vibrational event for the energizable elements on a subpicosecond time scale and generate gravitational waves.

26. A device according to claim 23 in which the beam particles collide with the energizable elements and produce a jerk or oscillation motion and generate gravitational waves.

27. A device according to claim 26 in which the beam particles collide with the energizable elements to produce a nuclear reaction.

28. A device according to claim 16 in which the energizing elements are microwaves.

29. A device according to claim 16 in which the energizing elements are one or more magnetic fields.

30. A device according to claim 16 in which the energizing elements are one or more electric fields.

31. A device according to claim 16 in which the energizable elements are aligned.

32. A device according to claim 16 in which the energizing elements move in step to define a gravitational-wave front and energize the energizable elements in sequential order to generate and accumulate gravitational-wave energy as the gravitational-wave front progresses.

33. A device according to claim 16 in which the energizing elements are photons of a laser.

34. A device according to claim 16 in which the energizing elements are electrons.

35. A device according to claim 16 in which the energizing elements are protons.

36. A device according to claim 16 in which the energizing elements are neutrons.

37. A device according to claim 16 in which the energizing elements are nuclear particles.

B1 cont.

38. A device according to claim 16 in which the energizing elements are atomic nuclei.

39. A device according to claim 16 in which the energizing elements are molecules.

40. A device according to claim 39 in which the molecules are ionized.

41. A device according to claim 16, in which the energizing elements are current-carrying coils.

42. A device according to claim 16, in which the energizable elements are one or more permanent magnets.

43. A device according to claim 16, in which the energizable elements are one or more electromagnets.

44. A device according to claim 16, in which the energizing elements are current-carrying electrical conductors.

45. A device according to claim 16, in which the energizable elements are current-carrying electrical conductors.

46. A gravitational wave detection device in which collector elements are interrogated in sequence according to an expected gravitational wave frequency in order to be a tuned gravitational wave receiver.

47. A device according to claim 46 in which the interrogations continue as the gravitational wave phase is determined and locked on by a control computer.

B' Cont.

48. A device according to claim 46 in which the collector elements are transducers.

49. A device according to claim 48 in which the transducers are parametric transducers.

50. A device according to claim 46 in which the collector elements are capacitors.

51. A device according to claim 46 in which the collector elements are harmonic oscillators.

52. A device according to claim 46 in which the collector element's signal can be measured by a superconducting quantum interference device (SQUID).

53. A device according to claim 46 in which the signal from the collector elements are sensed using quantum non-demolition (QND) techniques.

54. A device according to claim 32 in which the gravitational waves comprising the wave front are coherent.

55. A device according to claim 46 in which the collector elements are interrogated in a pattern according to an expected incoming gravitational wave direction in order to achieve directivity in GW reception.

56. A device according to claim 16 in which the energizable elements are energized in a pattern in order to achieve directivity in gravitational wave transmission.

B' cont.

57. A device according to claim 46 in which the directivity is changed over time in order to scan for gravitational wave transmissions.

58. A device according to claim 56 in which the directivity is changed over time in order to control the direction of the gravitational wave transmissions.

59. A device according to claim 56 in which the energizing elements are energized in a pattern that will transmit gravitational waves to a radiating gravitational wave transmitter in order to establish a GW communications source.

60. A device according to claim 16 in which the energizable elements are harmonic oscillators.

61. A device according to claim 46 in which the collector elements are an array of passive element sets or subsets.

62. A device according to claim 61 in which the collector element sets or subsets are disposed in a spherical array.

63. A device according to claim 62 in which the spherical array of collector element sets or subsets comprises a plurality of piezoelectric crystals spread evenly over the surface of a sphere.

64. A device according to claim 16 in which the energizable elements are capacitors.

65. A device according to claim 16 in which the energizable elements are an array of passive element sets or subsets.

B' cont.

66. A device according to claim 65 in which the energizable element sets or subsets are disposed in a spherical array.

67. A device according to claim 66 in which the spherical array comprises piezoelectric crystals spread evenly over the surface of a sphere.

68. A device according to claim 66 in which the energizable element sets or subsets comprise spherical piezoelectric crystals.

69. A device according to claim 68 in which electrodes are spread evenly over the surface of the piezoelectric crystals and operatively connected to a power source.

70. A device according to claim 62 in which the collector element sets or subsets comprise spherical piezoelectric crystals.

71. A device according to claim 70 in which electrodes are spread evenly over the surface of the piezoelectric crystals and operatively connected to a computer.

72. A device according to claim 42 in which the permanent magnets are submicroscopic.

73. A device according to claim 43 in which the electromagnets are submicroscopic.

74. A device according to claim 46 in which the collector elements are submicroscopic.

B1 cont.

75. A device according to claim 46 in which the tuned gravitational wave receiver receives gravitational waves refracted by a medium positioned in front of the gravitational-wave receiver.

76. A device according to claim 75 in which the medium is a superconducting medium.

77. A device according to claim 75 including a lens for concentrating or focusing the gravitational waves.

78. A device according to claim 75 including a series of gravitational-wave refracting media for concentrating or focusing the gravitational waves.

79. A device according to claim 16 in which a refractive medium concentrates or focuses the gravitational waves emitted by the gravitational wave generator.

80. A device according to claim 46 in which the gravitational wave frequency is generated by an extra terrestrial, astrophysical event.

81. A device according to claim 56 in which the pattern produces constructive interference among some of the gravitational waves.

82. A device according to claim 56 in which the pattern produces destructive interference among some of the gravitational waves.

83. A device according to claim 16, in which the energizable elements are piezoelectric crystals.

B1 Cont.

84. A device according to claim 16, in which the energizable elements are nanomachines.

85. A device according to claim 84 in which the nanomachines are harmonic oscillators.

86. A device according to claim 84 in which the nanomachines are nanomotors.

87. A device according to claim 84 in which the nanomachines are solenoids.

88. A device according to claim 84 in which the nanomachines are microelectromechanical systems (MEMS).

89. A gravitational wave communications device comprising:

a plurality of target nuclei aligned in a constrained state,

a source of submicroscopic particles directed at the target nuclei,

a computer-controlled logic system operatively connected to the particle source for selectively propelling the particles toward the target nuclei to produce a nuclear reaction,

a containment system for aligning the products of the nuclear reaction such that the particles move in approximately the same direction, produce a jerk or oscillation in the motion of the target nuclei and thereby generate gravitational waves, and

a transmitter operatively connected to the containment system for modulating the gravitational waves.

90. A device according to claim 89 wherein the transmitter includes a modulator.

B1 Cont.

91. A device according to claim 90 in which the modulator imparts information to the gravitational waves.

92. A device according to claim 91 including an antenna connected to the modulator for directing the modulated gravitational waves to a remote location.

93. A device according to claim 92 including a detector at a remote location for receiving the modulated gravitational waves.

94. A device according to claim 93 including a demodulator connected to the detector.

95. A device according to claim 94 including a presentation device connected to the demodulator.

96. A gravitational wave communications device comprising:

a gravitational wave generator for producing gravity waves,

a modulator connected to the generator for imparting information to the gravity waves,

a detector for receiving the modulated gravity waves, and

a demodulator for extracting the information from the gravitational waves and delivering it to a presentation device.

97. A device according to claim 16 in which the energizing elements are antiprotons.

98. A device according to claim 16 in which the energizable elements are antiprotons.

B' cont.

99. A gravitational wave propulsion system comprising:

a gravitational wave generator for producing coherent gravitational waves,

a housing for the gravitational wave generator for channeling and directing the gravitational waves in a direction opposed to the direction of propulsion, and

refractive control elements for altering the direction of the gravitational waves.

100. (Amended) A gravitational wave propulsion system comprising:

a gravitational wave generator for producing coherent gravitational waves,

a housing for the gravitational wave generator for channeling and directing the gravitational waves in a direction opposed to the direction of propulsion, and

a refractive control medium for focusing the gravitational waves.

101. A gravitational wave focusing system comprising:

a source of gravitational waves,

a first medium for transmitting said gravitational waves, and

a second medium interposed in the direction of travel of the gravitational waves for reducing the speed of transmission therein.

102. A device according to claim 101 in which the second medium is a superconductor.

103. A device according to claim 22 in which the nuclear particles are electrons.

B1 cont'd.

104. A device according to claim 16 in which the energizable elements are enveloped in a dielectric.

105. A device according to claim 104 in which the dielectric has a spherical form.

106. A device according to claim 16 in which the energizing elements are sources of electromagnetic radiation.

107. A device according to claim 16 in which the energizable elements are submicroscopic particles.

B2

108. (New) A device according to claim 16 in which energizable elements are maintained in a state of superconductivity.

109. (New) A device according to claim 46 in which the collector elements are maintained in a state of superconductivity.

110. (New) A gravitational wave propulsion system comprising:

a gravitational wave generator for producing gravitational waves that are a source of an additional gravitational field,

a housing for the gravitational wave generator for channeling and directing the gravitational waves in a direction that will create a change in gravity to urge a massive object in a preferred direction, and

refractive control elements for altering the direction of the gravitational waves.

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Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Respectfully submitted,

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626/795-9900

RJW/clb